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RESEARCH PAPER

Comparative Effectiveness of Lecture-cum-Demonstration Method over Lecture Method in Terms of Teaching Learning Objectives

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Abstract

In the field of educational research, psychologists and educationists have been trying to introduce interdisciplinary approach for than half a century. In this sequence the investigator has made an attempt to undertake a comparative study of two methods (lecture and lecture cum demonstration) in science teaching in terms of teaching learning objectives based on Bloom's Taxonomy. To find the academic level of the students, a teacher made pre-test based on knowledge, understanding, application and skill was administered as tools to collect data. After teaching them, post-test was applied on both the groups which was also prepared on the basis of teaching learning objectives. The means, SD and 't' values of correlated and uncorrelated means was analyzed after the compilation of the data. It shows that the lecture cum demonstration method emerged as an effective method to develop better abilities among the students.

INTRODUCTION

Education is a continuous process, which provides the opportunities to the every educated person. In ancient days, the emphasis was laid on dogmas, craning justified their position in teaching the students in place of natural and harmonious development (Yadav, 1997). But now a days, in the field of educational research, psychologists and educationists have been trying to introduce interdisciplinary approach for than half a century. In the first quarter of twentieth century, significant contribution was made by Armstrong (1903). He found many faults in the science teaching which was taught thought traditional teaching methods adopted by the teachers at that time. As the understanding of human thinking, especially in the field of cognitive psychology and behavioural psychology developed new methods emerged out to educate children.

With the explosion of knowledge, the theories of learning emerged this facilitated effective learning experiences for the teachers and students. The evolution of the learning theories gave insight to evolve

new approaches of instructions and developed the capability of human beings more meaningful. Many researchers classified the learning objectives in cognitive domain. In this area Bloom classified educational objectives in their behavioral outcomes and arranged them in a hierarchical order, as – knowledge, comprehension, application, analysis, synthesis and evaluation. After the Bloom, Guilford (1959), Bruner (1960), Piaget (1876-1980), Gagne (1962, 65, 77) and many researchers advocated the theories of learning in hierarchical order.

Ausubel (1968) proposed a theory which deals primarily with cognitive learning. He proposed ideas pertaining to psychology of “meaning verbal learning and retention”. He meant that meaningful learning is linked with existing concept in cognitive structure of the learner. He symbolized the process as follows:

$$\begin{array}{ccccc}
 x & + & Y & = & x'y' \\
 \text{Existing concepts} & & \text{New relevant} & & \text{Modified concept} \\
 \text{in cognitive structure} & & \text{information to be learned} & & \text{in cognitive structure}
 \end{array}$$

In India too, the studies in the field of methodology were attempted and they encouraged the researchers to undertake experimental studies based on careful observation so as to have pace with theory and practice. In this sequence the investigator has made an attempt to undertake a comparative study of two methods (lecture and lecture cum demonstration) in science teaching in terms of teaching learning objectives.

STATEMENT OF THE PROBLEM

The present investigation deals with an effort to identify the practicability of hierarchical order of the objectives in terms of knowledge, understanding, application and skill, respectively by experimenting upon two groups taught through lecture and lecture cum demonstration method.

OBJECTIVES OF THE STUDY

To find out the comparative effectiveness of lecture cum demonstration method over lecturer method in terms of teaching learning objectives.

HYPOTHESES

The following hypothesis was taken for the present study –

‘There is no significant difference in mean achievement scores of the two groups taught through lecture and Lecture cum Demonstration methods in terms of proposed hierarchical objectives- knowledge, understanding, application and skill’.

MECHANISM OF THE LEARNING

The present classification of the objectives was done on the basis of the critical analysis. The hierarchical order of the learning mechanism is proposed as follows –

(1) Knowledge: Knowledge is termed as the lowest level order of the objectives. It is supplemented with there learning process –

- (a) Perceiving – One perceives a thing or material.
- (b) Recognizing- He tries to recognize.
- (c) He recalls the facts, theories and principles.

(2) Understanding: The second learning objective- understating is supplemented the process- seeing relationship, discriminating, systematize the materials, classifying, interpreting and generalizing.

(3) Application: Problems are worked out on the basis of understanding. If one developed understanding to communicate to the content to the learner, he should apply it to solve novel problems (Bruner, 1966).

(4) Skill: It is an ability of the person to do something well, expertise and technically good.

DESIGN OF THE STUDY

Sample: The study was conducted in a coeducational school on a random sample of 40 students studying in class VIII. The school admits students from varying different socio-economic backgrounds.

Tools and Techniques: To find the academic level of the students, a teacher made pre-test based on knowledge, understanding, application and skill was administered as tools to collect data. Investigator selected five units to test the sample. Group ‘A’ taught through lecture method and group ‘B’ was taught through lecture cum demonstration method. After teaching them, post-test was applied on both the groups which was also prepared on the basis of teaching learning objectives.

ANALYSIS AND INTERPRETATION

The detailed structure given below represent the means, SD and ‘t’ values of correlated and uncorrelated means

Table- 1

Mean, SD’s and ‘t’ of correlated means on pre-test and post-test in the control group obtained for knowledge, understating, application and skill

Control Group – ‘A’								
Objectives	Pre-test			Post-test				Result
	N	M1	S.D.	M2	S.D.	D	‘t’	
1. Knowledge	20	9.30	2.60	8.45	2.23	0.85	1.53	$t < 0.10$
2. Understanding	20	8.45	2.15	9.35	2.26	0.90	1.37	$t < 0.10$
3. Application	20	8.25	2.17	7.70	3.31	0.55	1.44	$t < 0.10$

4. Skill	20	7.30	2.44	8.80	2.90	1.50	1.61	t<0.10(NS)
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From Table-1 it is clear that there was no significant difference in mean achievement scores obtained on pre-test and post-test for knowledge, understanding application and skill at 0.10 level of significance. The obtained 't' values were not reached the required level of significance hence the null hypothesis was not rejected.

Table –2

Mean S.D's and 't' on correlated means on pre-test and post-test in the experimental group obtained for-knowledge, understanding, application and skills.

Experimental Group – 'B'								
Objectives	Pre-test			Post-test				Result
	N	M1	S.D.	M2	S.D.	D	't'	
1. Knowledge	20	8.55	2.58	9.90	2.23	1.35	1.92	t>0.10 (s)
2. Understanding	20	9.15	2.17	9.80	2.56	0.56	1.14	t<0.10
3. Application	20	8.60	2.43	8.10	3.41	0.50	0.87	t<0.10
4. Skill	20	7.35	2.15	10.25	3.20	2.90	4.26	t>0.01(s)

Table –2, shows that there was significant difference in mean achievement scores obtained on pre-test and post-test for the objectives knowledge and skill at 0.10 and 0.01level of significance, respectively. On the other hand, there was no significant difference is mean achievement scores obtained on pre-test and post-test for understanding and application. The corresponding comparative values of means and S.D. are given.

Table –3

Mean, S.D's and 't' of correlated means on post-test in the control and experimental groups

Post-Test								
Objectives	Control Group- 'A'			Experimental Group- 'B'				Result
	N	M1	S.D.	M2	S.D.	D	't'	
1. Knowledge	20	8.45	2.24	9.90	2.23	1.45	2.07	t>0.05 (s)
2. Understanding	20	9.35	2.26	9.80	2.56	0.45	0.59	t<0.10
3. Application	20	7.70	3.31	8.10	3.41	0.40	0.37	t<0.10
4. Skill	20	8.80	2.89	10.25	3.20	1.40	1.49	t<0.10

Table 3, shows that there was significant difference in mean achievement scores obtained on post-test of the control group (A) and experimental group (B) for objective knowledge. On the other hand,

there was no significant difference in mean achievement scores obtained on the post-test of group 'A' and 'B' for understanding, application and skill.

DISCUSSION OF RESULTS

Results of the present investigation were analyzed under the Tables- 1, 2 and 3. From the tables the scores of the post-test in favour of experimental group 'B'. It is cleared that the subjects taught through lecture cum demonstration method, gained significantly better knowledge of concept, which is due to increased recall and retention. Significantly better results of experimental group for skill were found in favour of post-test. It shows that the development of an ability to do something different can be increased with the better teaching learning process.

CONCLUSIONS

Based on the statistical analysis of the data, their interpretation and discussion on results, the following conclusions were drawn:

1. There was no significant difference in the mean scores of pre-test and post-test of the control group taught through lecture method. It can therefore conclude that, there is no betterment in the students taught through this method.
2. The subject gained significantly better knowledge concept on post-test than did the subjects on pre-test in the experimental group taught through lecture cum demonstration method. It shows the increase in the process of perceiving, recognizing and recalling.

The subjects scored better on the objective of skill on post-test. It shows that the development of an ability to do something well and different, can be created with better teaching learning methods. Lecture cum demonstration method can appear to elevate the higher dimensions of learning through analysis and synthesis than the lecture method.

3. The subjects gained better knowledge on the post test in the experimental group than the control group. It shows that the lecture cum demonstration method emerged as an effective method to develop better abilities in the students. The subjects, who acquire the knowledge concept, can develop better understanding, understanding develops application and application helps the learner to solve the problems through their skills.

To sum up, it can be concluded that the lecture cum demonstration method could be employed in the class-room teaching for the graders above VIII, to provide them the better teaching learning situations and to upgrade the teaching learning objectives.

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